IN THE CLAIMS:

Please amend Claim 7 and add new Claims 31-33 as follows.

1. (Previously Presented) A 3D image data generator that generates 3D image data for a 3D display apparatus that emits a plurality of rays to form intersections of the plurality of rays in air, wherein the plurality of rays from the intersections enter into an eye of an observer to be viewed as light flux, such that the observer recognizes the intersections as point images, a large collection of which forms a 3D image,

wherein said data generator generates 3D image data by using a plurality of parallax images.

2. (Previously Presented) The 3D image data generator according to claim 1, wherein said plurality of parallax images are images acquired at a plurality of viewing points of an imaging system, and their pixel count and alignment match the number and alignment of ray sources.

3. (Previously Presented) The 3D image data generator according to claim 2, wherein when obtaining said plurality of parallax images, only an effective area for generating said 3D image reproduction data is clipped by trimming.

4. (Previously Presented) The 3D image data generator according to claim 3, wherein after said trimming, the trimmed image is further shrunk or stretched.

5. (Previously Presented) The 3D image data generator according to claim 2, wherein when obtaining said plurality of parallax images, to limit an effective area for generating 3D image reproduction data, an area board which indicates said effective area is imaged together with the object.

6. (Previously Presented) The 3D image data generator according to claim 5, wherein said area board is set up virtually in a virtual space constructed on a computer and is not taken into the parallax image data acquired.

7. (Currently Amended) The 3D image [[r]] data generator according to claim 2, wherein when obtaining said plurality of parallax images, the locations of the viewing points move in the imaging system such that the optical axis of the imaging system will move in parallel.

8. (Previously Presented) The 3D image data generator according to claim 5, wherein when obtaining said plurality of parallax images, the locations of the viewing points move in the imaging system such that the optical axis of the imaging system will always pass through the center of said effective area.

9. (Previously Presented) The 3D image data generator according to claim 1, wherein said 3D image reproduction data is a group of rays emitted from the ray sources and sampled on a plane that is located near the observer and intersects with the group of rays, said data having pixel count and alignment that match the number of viewing points and alignment of said ray sources needed to obtain said parallax images.

10. (Previously Presented) The 3D image data generator according to claim 9, wherein said 3D image reproduction data is generated from said plurality of parallax images, with pixels from the same location in each of the parallax images arranged according to the alignment of the parallax images.

11. (Previously Presented) The 3D image data generator according to claim 1, wherein said 3D image reproduction data is represented as parallax image arrays Q (i, j) of w2 pixels wide × h2 pixels high parallax images, w2 and h2 coincide with the horizontal resolution and vertical resolution, respectively, of the viewing points for obtaining said

parallax image data, and (i, j) corresponds to the locations of the ray sources capable of generating said 3D image reproduction data,

said parallax image data is represented as image arrays P (x, y) of w1 wide × h1 pixels high image, w1 and h1 coincide with the horizontal resolution and vertical resolution, respectively, of said sources, and (x, y) corresponds to the locations of the viewing points for obtaining said parallax image, and

any given element image Q (m, n) of said image arrays Q (i, j) is formed by mapping the pixel information at the location (m, n) in said image arrays P (x, y) for all the values of x and y to the pixel information at the location (m, n) of the image Q (m, n).

12. (Cancelled)

13. (Previously Presented) A 3D image generating method that generates 3D image data for a 3D display apparatus that emits a plurality of rays to form intersections of the plurality of rays in air, wherein the plurality of rays from the intersections enter into an eye of an observer to be viewed as light flux, such that the observer recognizes the intersections as point images, a large collection of which forms a 3D image,

wherein said generating method generates 3D image data by using a plurality of parallax images.

14-24. (Cancelled)

25. (Original) A computer-readable storage medium that stores program code created in accordance with the method recited in claim 13.

26. (Previously Presented) The 3D image data generator according to claim 1, wherein said 3D display apparatus causes the observer to recognize the 3D image of the object by irradiating a plurality of rays through the intersection formed by themselves into the observer's one eye.

27. (Previously Presented) The 3D image generating method according to claim 13, wherein said 3D display apparatus causes the observer to recognize the 3D image of the object by irradiating a plurality of rays through the intersection formed by themselves into the observer's one eye.

28. (Previously Presented) A 3D display apparatus that forms intersections of a plurality of rays in air to generate a 3D image of an object, comprising:

a display panel with a plurality of light sources for emitting a plurality of rays; and

a controller for controlling said display panel to emit rays from the light sources to a direction of viewing points where parallax images are obtained,

wherein said controller controls either colors or intensities of rays based on the plurality of parallax images which contain the object image, the plurality of rays from the plurality of light sources form intersections in air, and the plurality of rays from the intersections enter into an eye of an observer to be viewed as light flux, such that the observer recognizes the intersections as point images, a large collection of which forms a 3D image.

29. (Previously Presented) The apparatus according to claim 28, wherein said controller associates each light source with a coordinate of each pixel on the parallax images according to coordinates of the viewpoints where the parallax images are obtained, and coordinates of the light sources and colors and intensities of rays emitted from the light sources to the viewpoints are based on the colors and brightness of corresponding pixels.

30. (Previously Presented) A method for controlling a display panel comprising a plurality of light sources for emitting a plurality of rays, said method comprising:

inputting parallax images of an object obtained at viewpoints of an imaging system;

associating coordinates of the light sources with coordinates of pixels in the parallax images according to coordinates of the viewpoints and the coordinates of the light sources;

determining a color and intensity of a ray emitted from each light source to the direction of the viewpoints based on a color and intensity of each corresponding pixel; and

emitting a ray of the determined color and intensity from each light source to the direction of the viewpoints,

wherein said display panel is a panel that is used for a 3D display apparatus which emits a plurality of rays to form intersections of the plurality of rays in air, wherein the plurality of rays from the intersections enter into an eye of an observer to be viewed as light flux, such that the observer recognizes the intersections as point images, a large collection of which forms a 3D image.

31. (New) A 3D display apparatus that displays 3D image data of an object at an observation area to cause an observer to recognize a 3D object image, comprising:

a 3D image data generator which generates the 3D image data from a plurality of parallax images of the object obtained from a plurality of different view points, wherein the generated 3D image data is different from the plurality of parallax images;

an image display panel which emits image rays according to the 3D image data;

an aperture-forming panel which generates small apertures according to the 3D image data and which is arranged on the observation area side of said image display panel, wherein the apertures are able to shift rapidly; and

a converging lens which is arranged between said image display panel and said aperture-forming panel,

wherein, a plurality of intersections of rays are generated at selected locations in 3D space by image rays emitted from said image display panel through said converging lens and the apertures, and

a plurality of rays from each intersection of rays enter into an eye of the observer and cause the observer to recognize a depth of the 3D object image by each intersection of rays being recognized as a point image.

32. (New) A 3D display apparatus that displays 3D image data of an object at an observation area to cause an observer to recognize a 3D object image, comprising:

a 3D image data generator which generates the 3D image data from a plurality of parallax images of the object obtained from a plurality of different view points, by

rearranging pixels, each having the same address in the parallax images, based on each view point from which each pixel is obtained, wherein the generated 3D image data is different from the plurality of parallax images;

an image display panel which emits image rays according to the 3D image data;

an aperture-forming panel which generates small apertures according to the 3D image data and which is arranged on the observation area side of said image display panel, wherein the apertures are able to shift rapidly; and

a converging lens which is arranged between said image display panel and said aperture-forming panel,

wherein image rays emitted, based on the 3D image data, from said image display panel through said converging lens and the apertures reach the corresponding view points, and generate a plurality of intersections of rays at selected locations in 3D space between the view points and said aperture-forming panel, and

a plurality of rays from each intersection of rays enter into an eye of the observer and cause the observer to recognize a depth of the 3D object image by each intersection of rays being recognized as a point image.

33. (New) A 3D display apparatus that displays 3D image data of an object at an observation area to cause an observer to recognize a 3D object image, comprising:

a 3D image data generator which generates the 3D image data from a plurality of parallax images of the object obtained from a plurality of different view points, by rearranging pixels, each having the same address in the parallax images, based on each view point from which each pixel is obtained, wherein the generated 3D image data is different from the plurality of parallax images;

an image display panel which emits image rays according to the 3D image data;

an aperture-forming panel which generates small apertures according to the 3D image data and which is arranged on the observation area side of said image display panel, wherein the apertures correspond to the pixels in the parallax images and are able to shift rapidly; and

a converging lens which is arranged between said image display panel and said aperture-forming panel,

wherein the 3D image data is generated such that the pixels in the parallax images are rearranged at addresses in the 3D image data to enable image rays emitted from the image display panel, each image ray corresponding to each pixel in the 3D image data, through said converging lens and the apertures respectively to reach corresponding view points at which the parallax images including each corresponding pixel are respectively obtained,

image rays emitted, based on the 3D image data, from said image display panel through said converging lens and the apertures reach the corresponding view points, and generate a plurality of intersections of rays at selected locations in 3D space between the view points and said aperture-forming panel, and

a plurality of rays from each intersection of rays enter into an eye of the observer and cause the observer to recognize a depth of the 3D object image by each intersection of rays being recognized as a point image.